1. (Currently Amended) A system ~~An apparatus~~ for acquiring , processing and displaying image data of a patient's breast ~~use in generating images of a selected region of a patient's body,~~ comprising: ~~a radiation source for transmitting a radiation signal through a selected region of a patient's body; radiation detection means, positionable for scanning movement along a first path, for receiving a portion of said radiation signal passing through a selected region of a patient's body during said scanning movement and providing a first image signal responsive thereto; and an ultrasound transducer, positionable for scanning movement along a second path, for receiving an ultrasound signal from a selected region of a patient's body during said second movement and providing a second image signal responsive thereto, wherein said second path is one of the same and substantially coincidental to said first path.~~

a breast immobilizing device;

an x-ray source producing a beam of x-rays that selectively rotates about a selected pivot axis, said beam irradiating a patient's breast positioned in said immobilizing device, said irradiating being along a multiplicity of different directions of the beam relative to the breast and taking place while the breast remains immobilized;

an imager detecting x-rays within the beam that have passed through the patient's breast to generate x-ray image data describing a multiplicity of initial x-ray images related to said multiplicity of directions along which the x-ray beam irradiates the breast;

an ultrasound system acquiring ultrasound image data describing a multiplicity of initial ultrasound images of the breast;

a processing system processing the x-ray image data and the ultrasound image data and producing at least one processed x-ray image of the breast suitable for display and at least one processed ultrasound image suitable for display; and

a display system concurrently displaying the processed x-ray image and the processed ultrasound image.

29. (New) A system as in claim 28 in which the ultrasound system includes at least one ultrasound transducer that both emits and receives ultrasound signals and is at one side of the breast.

30. (New) A system as in claim 28 in which the ultrasound system includes at least two ultrasound transducers that are at opposite sides of the breast.

31. (New) A system as in claim 28 in which said pivot axis is at a focal spot from which the x-ray beam emanates.

32. (New) A system as in claim 28 in which said processed x-ray image is a projection image.

33. (New) A system as in claim 28 in which the concurrently displayed processed x-ray and ultrasound images are at different orientations relative to the breast.

34. (New) The system as in claim 28 wherein the image detector and ultrasound system are located in the same housing.

35. (New) The system as in claim 28 wherein the image detector and ultrasound system are selectably connectable.

36. (New) A system for acquiring x-ray and ultrasound image data of a patient's breast comprising:

an x-ray imaging system including a rotating x-ray source and a detector positioned to receive x-rays from the rotating source during an x-ray scan of the patient's breast;

an ultrasound system acquiring ultrasound image data describing a multiplicity of initial ultrasound images of the breast; and

a driving mechanism, coupled to both the x-ray imaging system and the ultrasound imaging system for controlling movement of the x-ray imaging system and the ultrasound imaging system during x-ray image and ultrasound image acquisition.

37. (New) The system according to claim 36 wherein the x-ray imaging system movement is synchronized with the ultrasound system movement during x-ray and ultrasound image acquisition.